

## MOBILETT Plus HP

**SP**

### Wiring Diagram

From Serial No. 30800

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Table of content

Survey..... 4

Overviews

Block diagram system-cable-fuses ..... 20  
List of boards ..... 40  
Measuring points..... 41

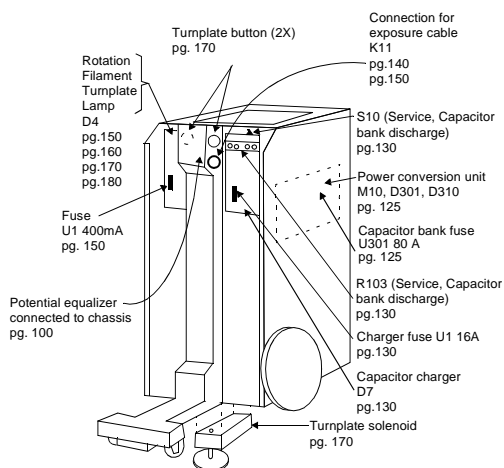
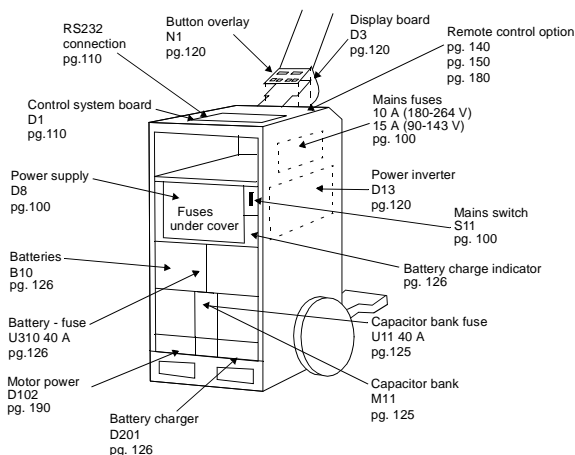
Functional diagrams

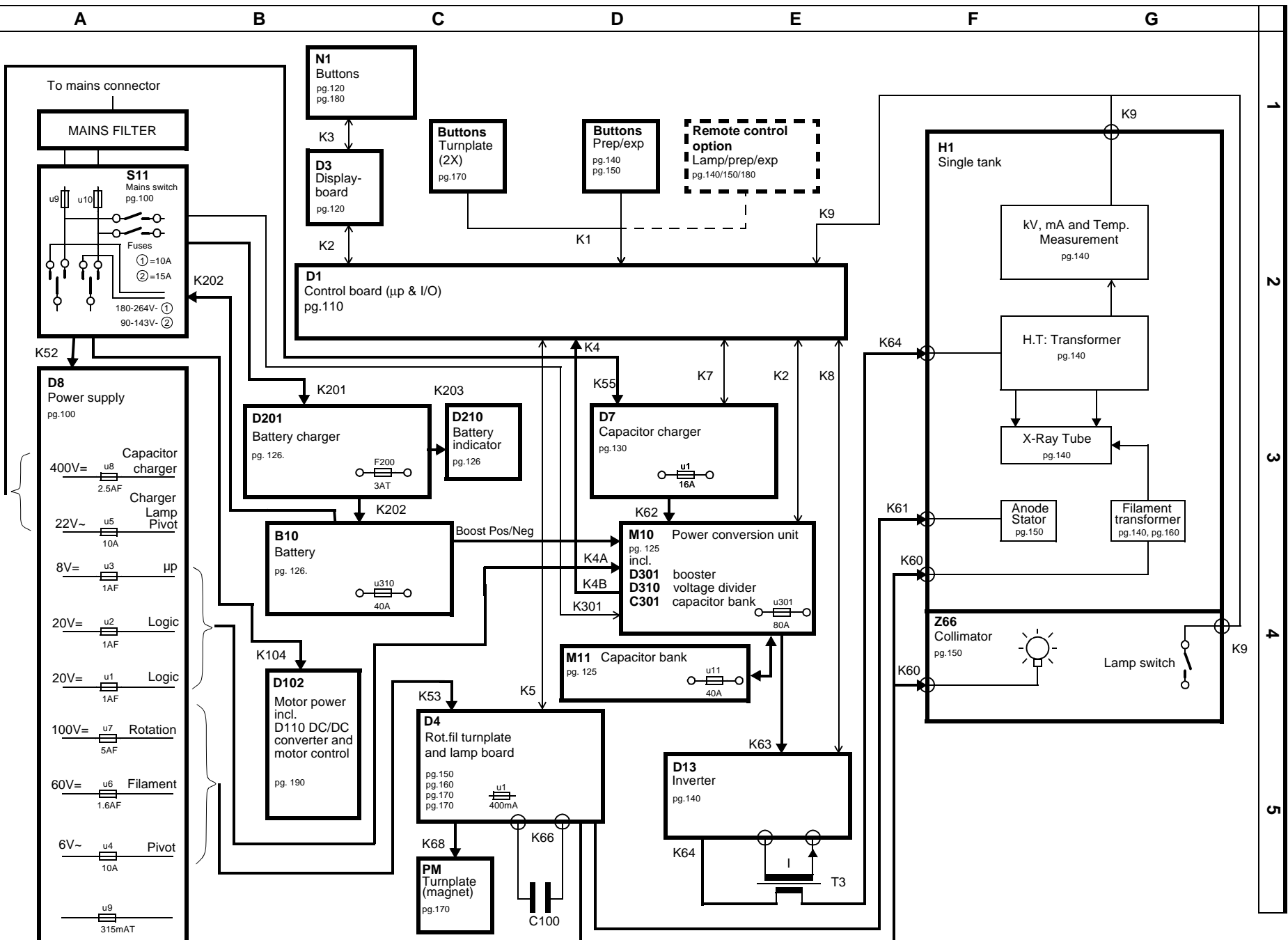
Power supply (D8) ..... 100  
Control system (D1) ..... 110  
Display and user buttons (D3) ..... 120  
Power conversion unit (M10, M11, D301, D310) ..... 125  
Battery (B10) and battery charger (D201)..... 126  
Capacitor charger (D7) ..... 130  
Inverter and high tension transformer (D13) ..... 140  
kV and mA diagrams..... 141  
Anode rotation (D4)..... 150  
Filament heating (D4) ..... 160  
Turnplate control (D4) ..... 170  
Lamp control (D4) ..... 180  
Motor power (D102) ..... 190

## Notes on block diagram

- \* The block diagram supports troubleshooting on board level, not on component level.
- \* The function on D1, control board, described in sheet with number above 110 shows the common function of hard- and software.

The circuits are only models and do not necessarily exist physically.





## List of boards

No.	Name	Part No	Type No	On sheet
D1	Control board	6447531	X037E	20, 100, 110, 120, 130, 140, 150, 160, 170, 180
D3	Display board	6167170	X037E	20, 100, 110, 120, 180
D4	Rotation, inverter, filament, lamp and turnplate board *	6077106	X037E	20, 100, 110, 150, 160, 170, 180
D7	Capacitor charger *	6077247	X037E	20, 100, 110, 130
D8	Power supply *	6077353	X037E	20, 100, 130, 150, 160, 170, 180
D13	HT-inverter *	6508654	X037E	20, 100, 110, 140
D102	Motor power *	6508571	X037E	20, 190
D110	DC/DC converter *	6447390	X037E	20, 190
D201	Battery charger *	6508522	X037E	20, 126
D210	Battery indicator	6447424	X037E	20, 126
D301	Booster	6451525	X037E	20, 100, 110, 125
D310	Voltage divider	6447309	X037E	20, 125
---	Remote control PCB board, option	6564202	X037E	20, 100, 110, 140, 150, 180

\* Complete unit with heat sink

## Measuring points

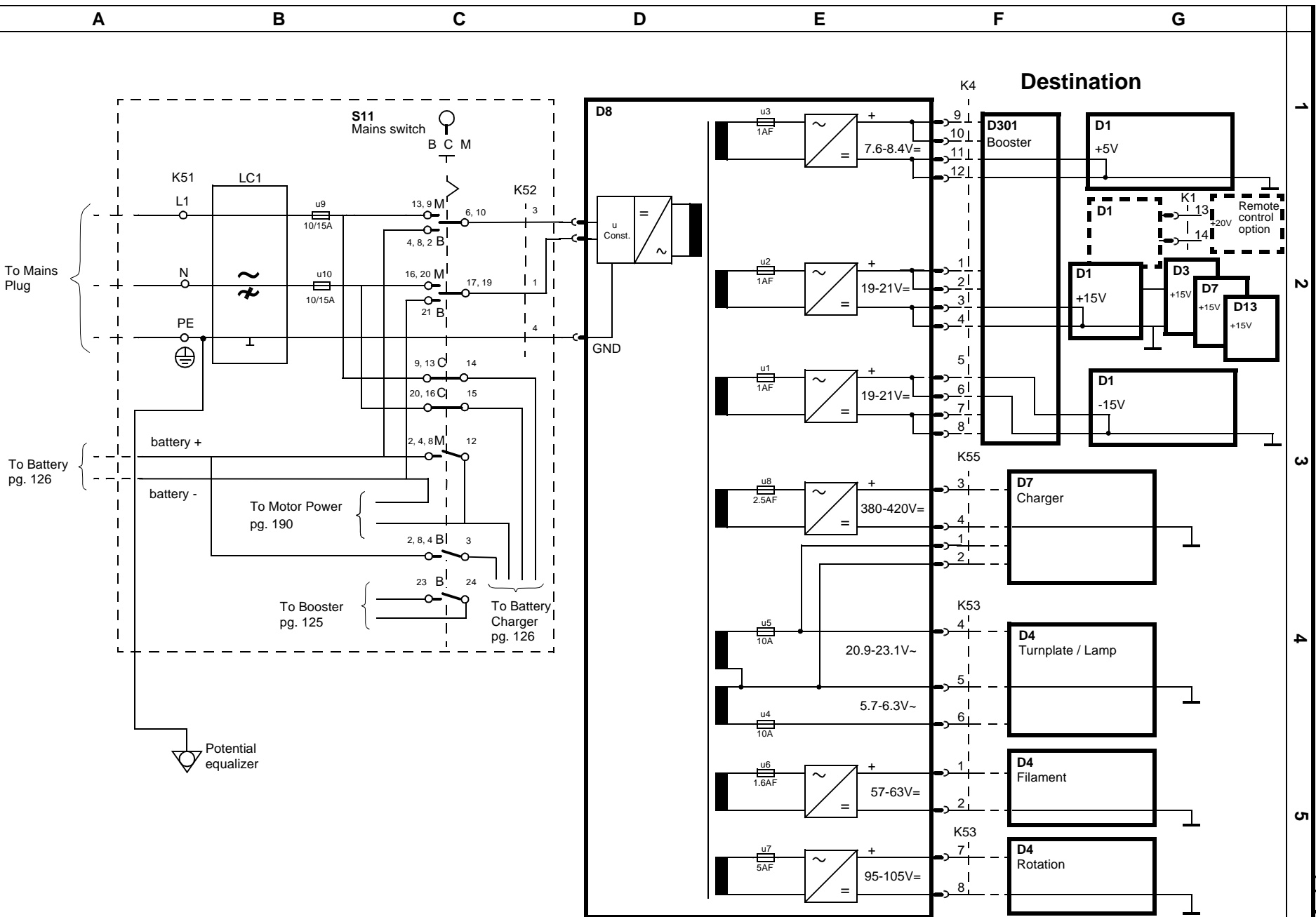
## Measuring points

Name	PC-board	Page	Function
CAPNEG	D7	130	Negative side of capacitor bank
CAPPOS	D7	130	Positive side of capacitor bank
CAPVOL	D1	130	Voltage level in capacitor bank
CHARGEHIGH <sup>2</sup>	D7	130	Charge with high power level
CHARGELOW <sup>2</sup>	D7	130	Charge with low power level
CLEAROV <sup>2</sup>	D7	130	Reset overvoltage blocking
DISCHARGE <sup>2</sup>	D7	130	Discharge capacitor bank
FIL	D4	160	Trigger pulses to filament booster
FILVAL	D1	160	Current through filament transformer
FILVOL	D1	160	Supply voltage for filament heating
HT	D1	140	Tube voltage
HTD	D1	140	High tension asymmetry
HTNEG	D1	140	Negative part of high tension
HTPEAK	D1	140	Tube voltage peak value
HTPOS	D1	140	Positive part of high tension
INVA	D13	140	Trigger pulses to inverter
INVB	D13	140	Trigger pulses to inverter
LAMP ON	D4	180	Collimator lamp control
MAPOS	D1	140	Current through high tension unit. One part corresponds to the real tube current.
PIVOT ON	D4	170	Push turnplate down
PIVOT HOLD	D4	170	Hold turnplate down
RESET <sup>2</sup>	D1	110	Reset signal for up
ROT	D1	150	Tube anode speed
ROTA	D4	150	Trigger pulses to inverter for anode speed
ROTB	D4	150	Trigger pulses to inverter for anode speed
ROT_VAL	D4	150	Tube anode speed

Power	PC-board	Page	Function
+5V, +15V, -15V, GND	D1	110	---
+5V, GND	D3	120	---
+5V, +15V, GND	D4	150	---
100VDC, 100VDCRET <sup>1</sup>	D4	150	---
60VDC, 60VDCRET <sup>1</sup>	D4	160	---
+5V, +15V, GND	D7	130	---
+5V, +15V, GND	D13	140	---
+5V, +15V, +16.5, -15V, GND, TP_bat	D301	125	---

## Notes!

- 1) 100VDCRET and 60VDCRET mean the "GND" side of the specified supply voltage
- 2) Active low function





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## Measuring points:

**Control board**

**+15V, +5V, GND, -15V:** Supply voltage

**CAPVOL:** 1V  $\Rightarrow$  82V in capacitor bank

**FILVAL:** 1V  $\Rightarrow$  1.5A filament current

**FILVOL:** 1V  $\Rightarrow$  14V filament voltage.

Normal = 4.3V  $\Rightarrow$  60V

**HTNEG:** -1V  $\Rightarrow$  -10kV Negative part of high voltage.

**HTPOS:** 1V  $\Rightarrow$  10kV Positive part of high voltage

**HTD:**  $\pm$ 1V/40kV High voltage asymmetry.

HTNEG + HTPOS = HTD

**HT:** 1V  $\Rightarrow$  40kV Tube voltage

**HTPEAK:** 1V  $\Rightarrow$  40kV Peak value of tube voltage

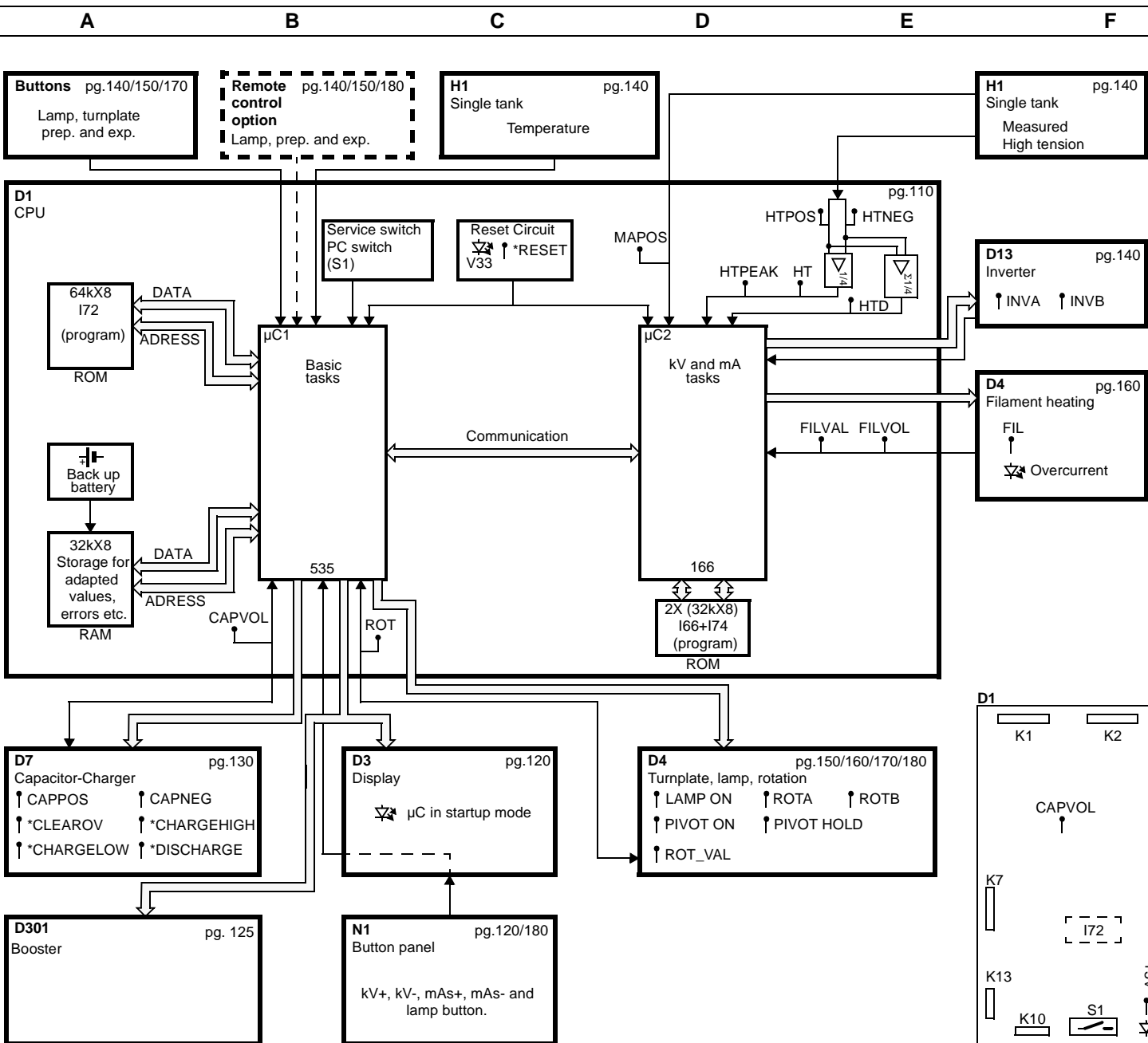
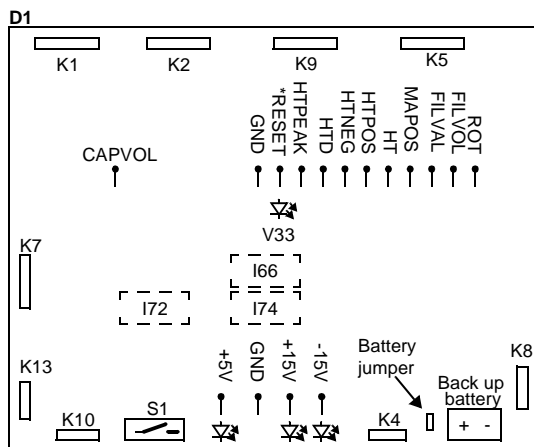
**MAPOS:** 1V  $\Rightarrow$  100mA

**NOTE:** The HT and MAPOS signals are described on page 141.

**ROT:** See page 150.

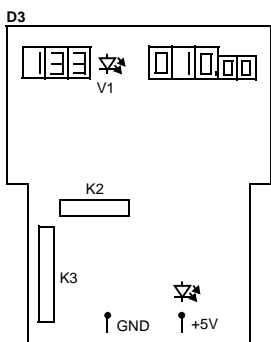
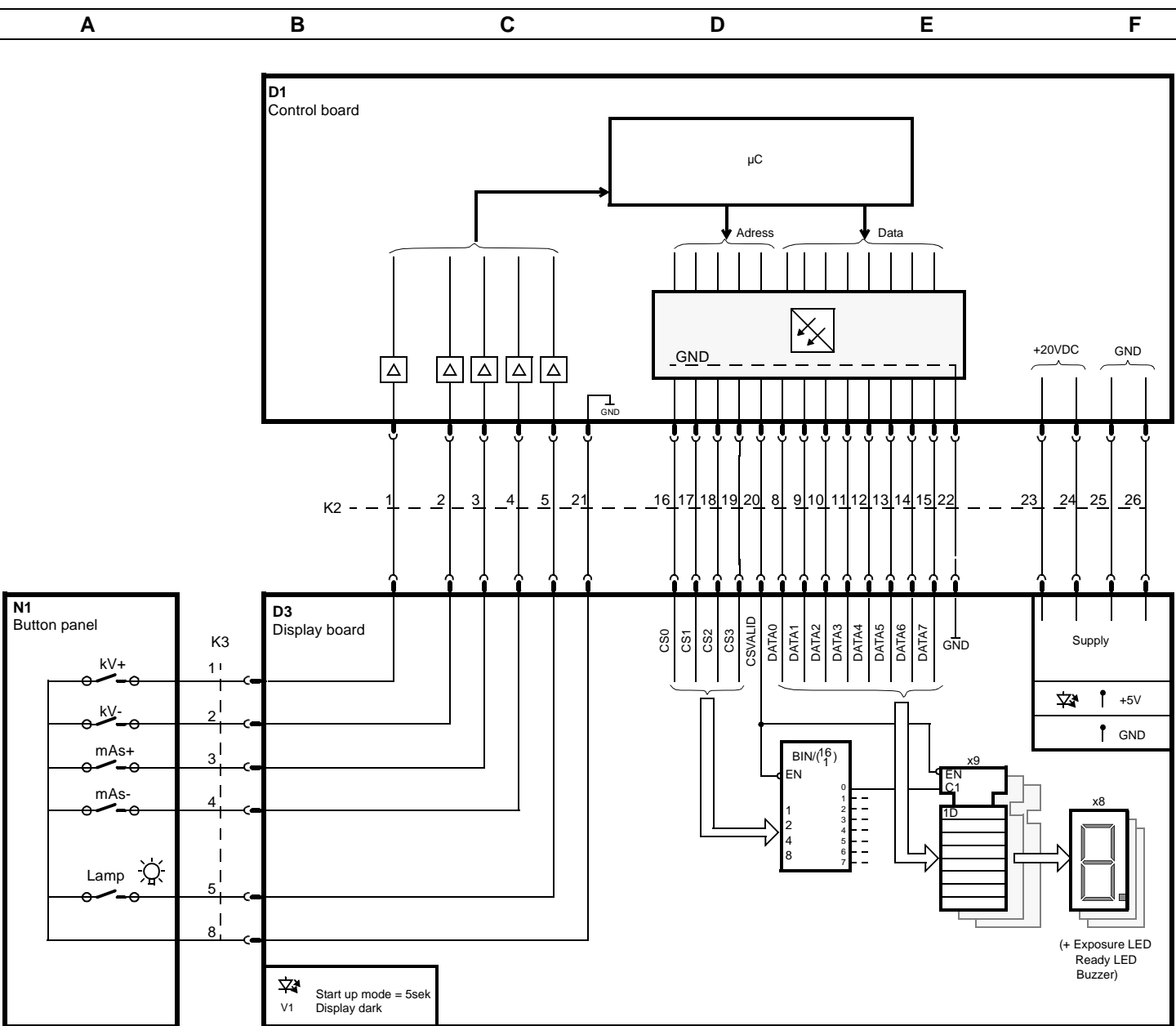
**Mainreset**

**\*RESET:** Resets the  $\mu$ C by an active low signal.

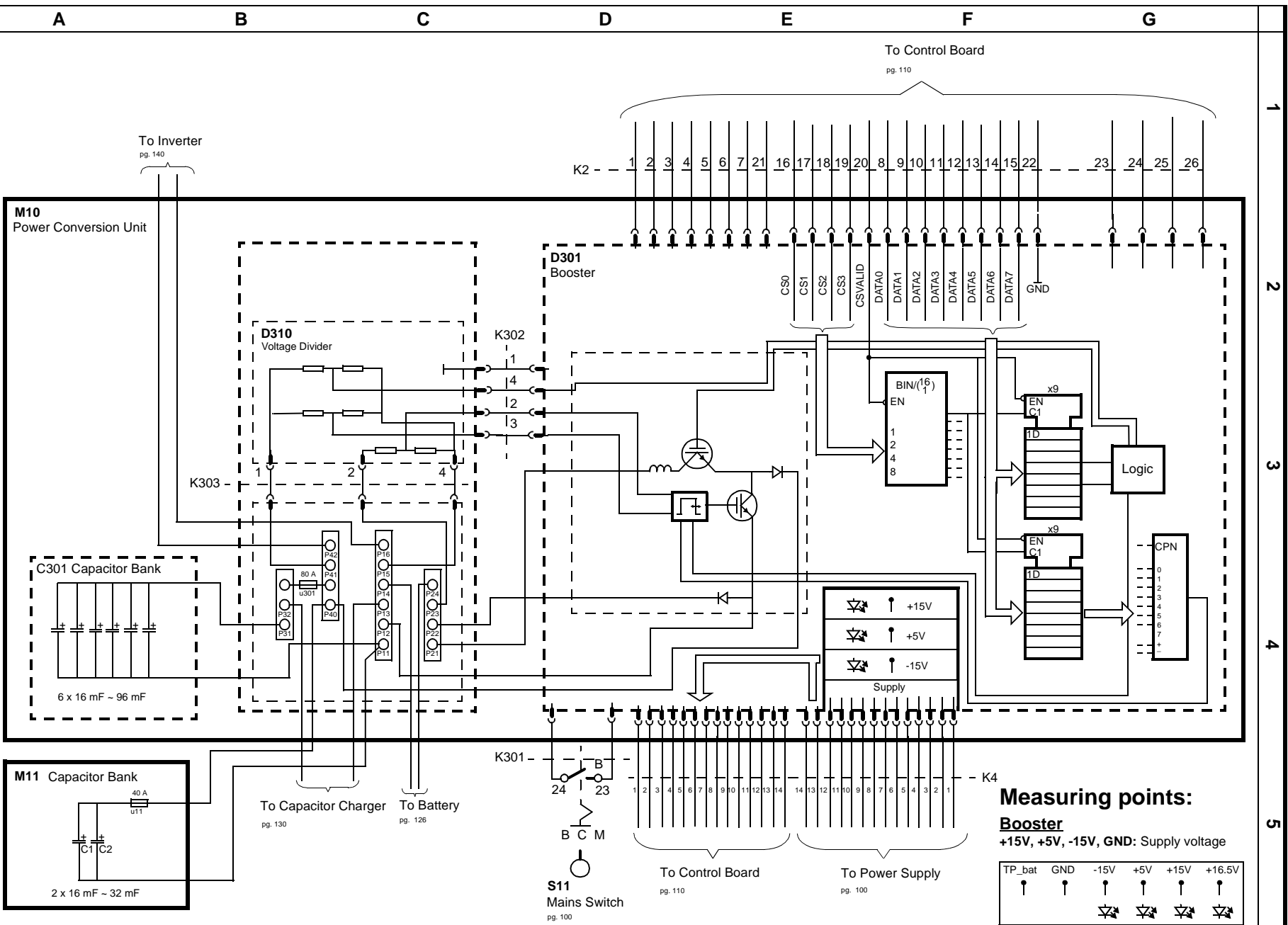


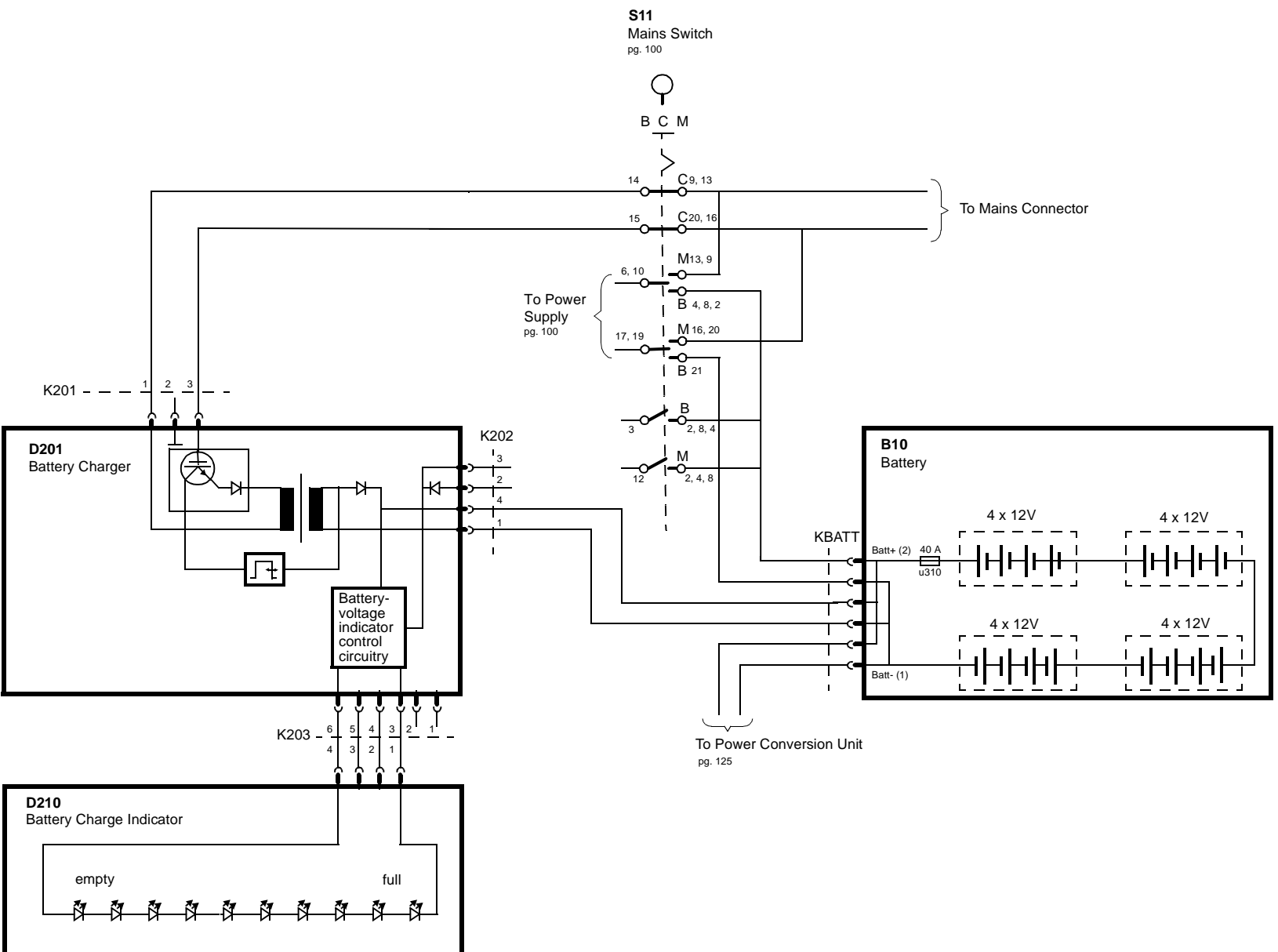
**Measuring points:**Display board**+5V, GND:** Supply Voltage

**! When  $\mu\text{C}$  is in start up mode, display is dark and V1 lights. When startup mode is ready, V1 is turned off and normal displays are on.**



## Power Conversion Unit





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## Measuring points:

### Capacitor charger

**+15V, +5V, GND:** Supply voltage

**\*CHARGELOW:** Reduced charging power.

**\*CHARGEHIGH:** Maximum charging power.

**\*DISCHARGE:** Discharge entire capacitor bank or just decrease level.

**CAPPOS:** Positive part of voltage in capacitor bank.

**CAPNEG:** Ground

**\*CLEAROV:** Reset the overvoltage blocking.

### Control board

**CAPVOL:** 1V = 82V

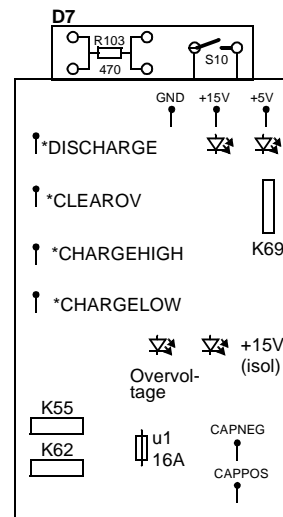
Normal 4.3V  $\Rightarrow$  350V

**! The voltage in capacitor bank depends on selected kV.**

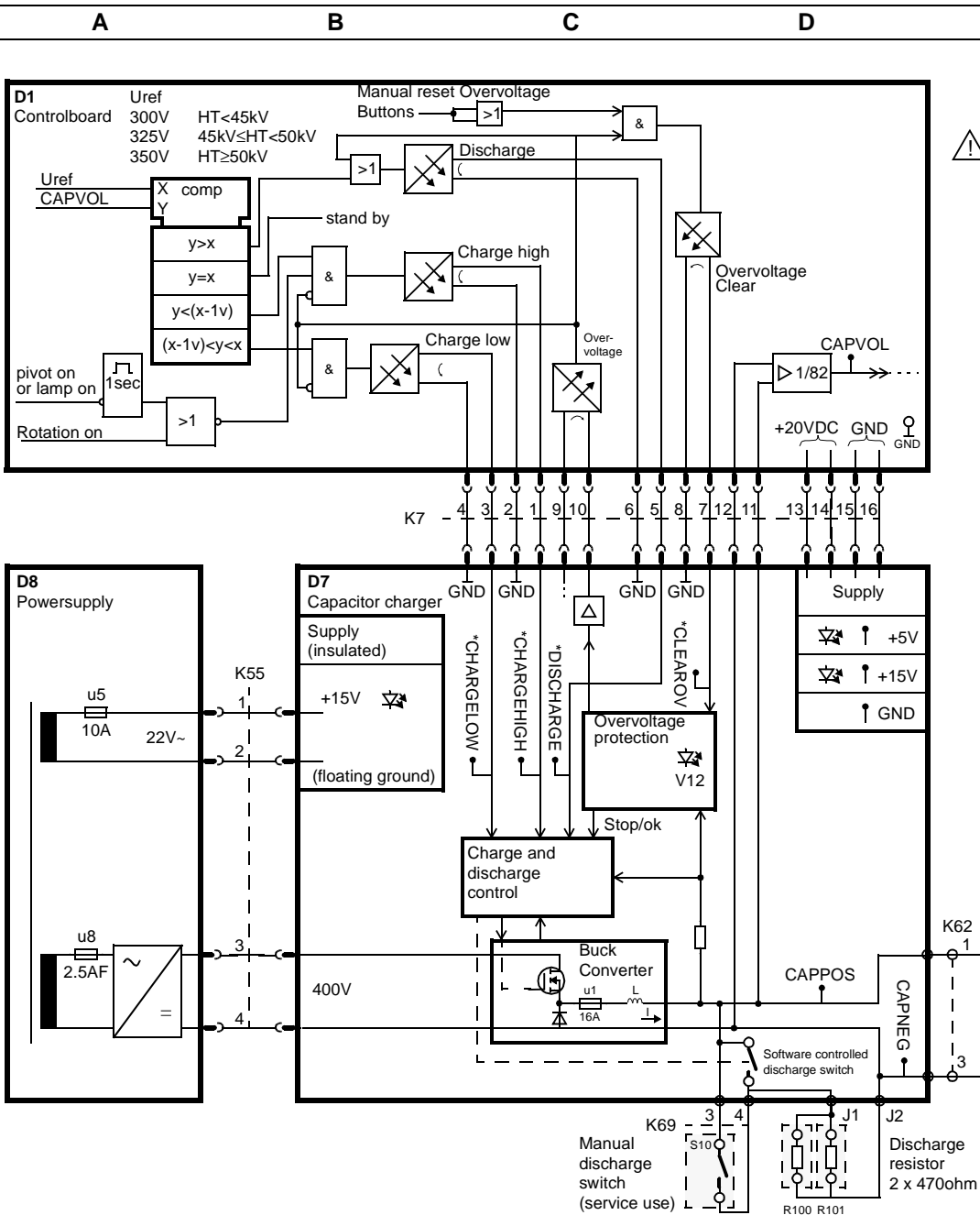
<45kV  $U_c$  = 300V

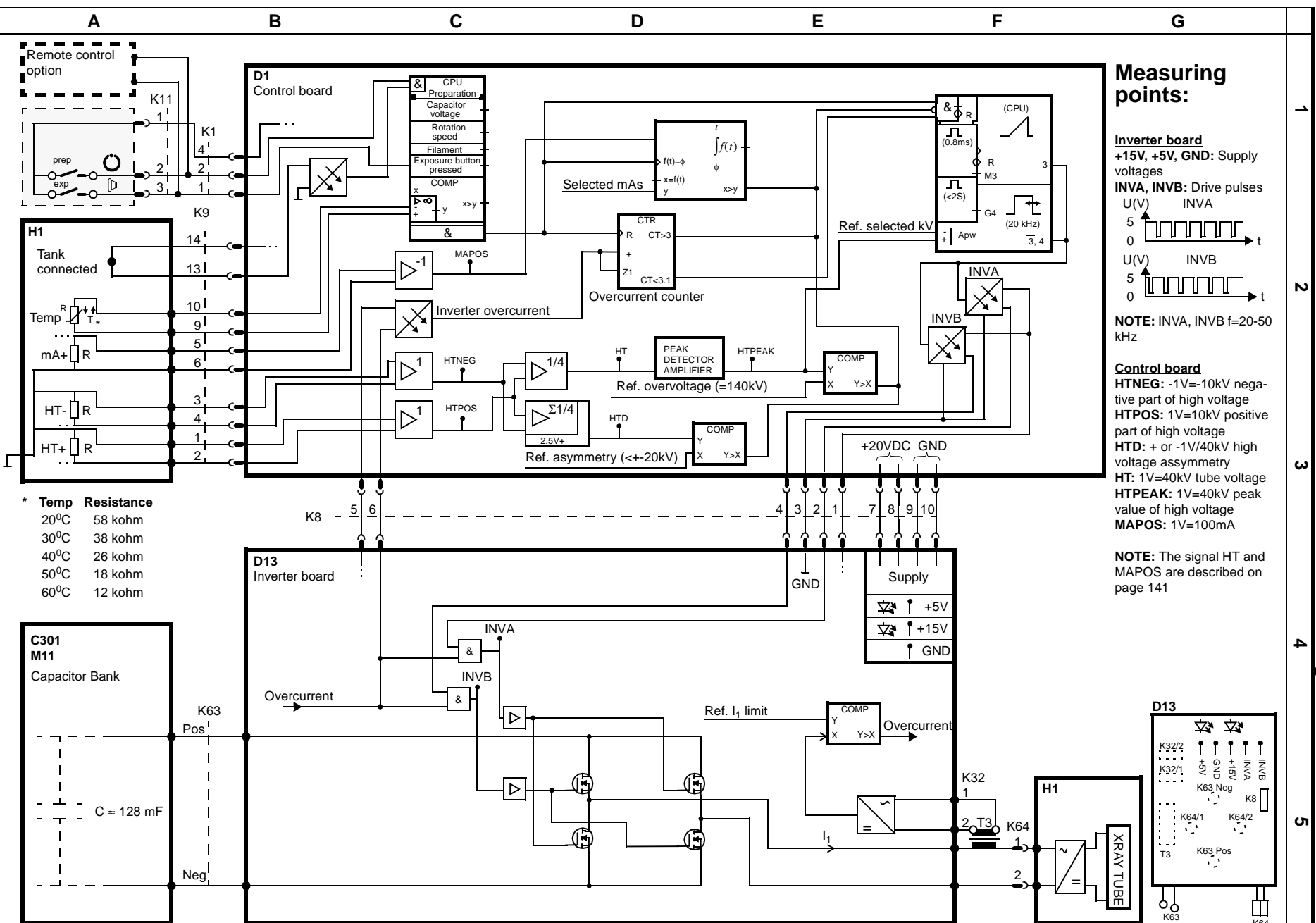
$\geq 45kV$  to <50kV  $U_c$  = 325V

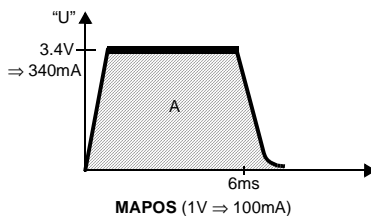
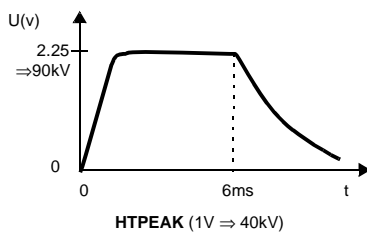
$\geq 50kV$   $U_c$  = 350V



**! Read service instruction, safety notes before work on this block.**  
Here is a risk for electrical shock!



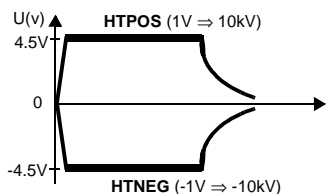


**Example: Exposure results 90kV 2.0mAs measured on D1****Calculating mAs**

mAs = current x exposure time

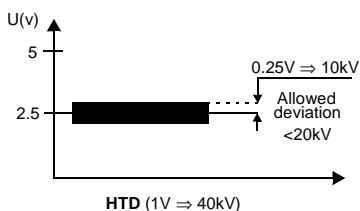
mAs = 340mA x 0.006s = 2.0mAs

**NOTE:** The signal contains high frequency 20-40 kHz and can cause sampling problems (Aliasing effect)



HTPOS-HTNEG = 4.5 - (-4.5) = 9V

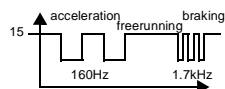
9V => 90kV



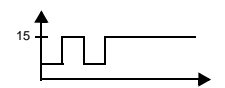
## Measuring points:

**Rotation board**

**+15V, +5V, GND, 100VDC, 100VDCRET:** Supply voltage  
**ROTA:** Drive pulse A 180° phase angular to ROTB.



**ROTB:** Drive pulse B 180° phase angular to ROTA.

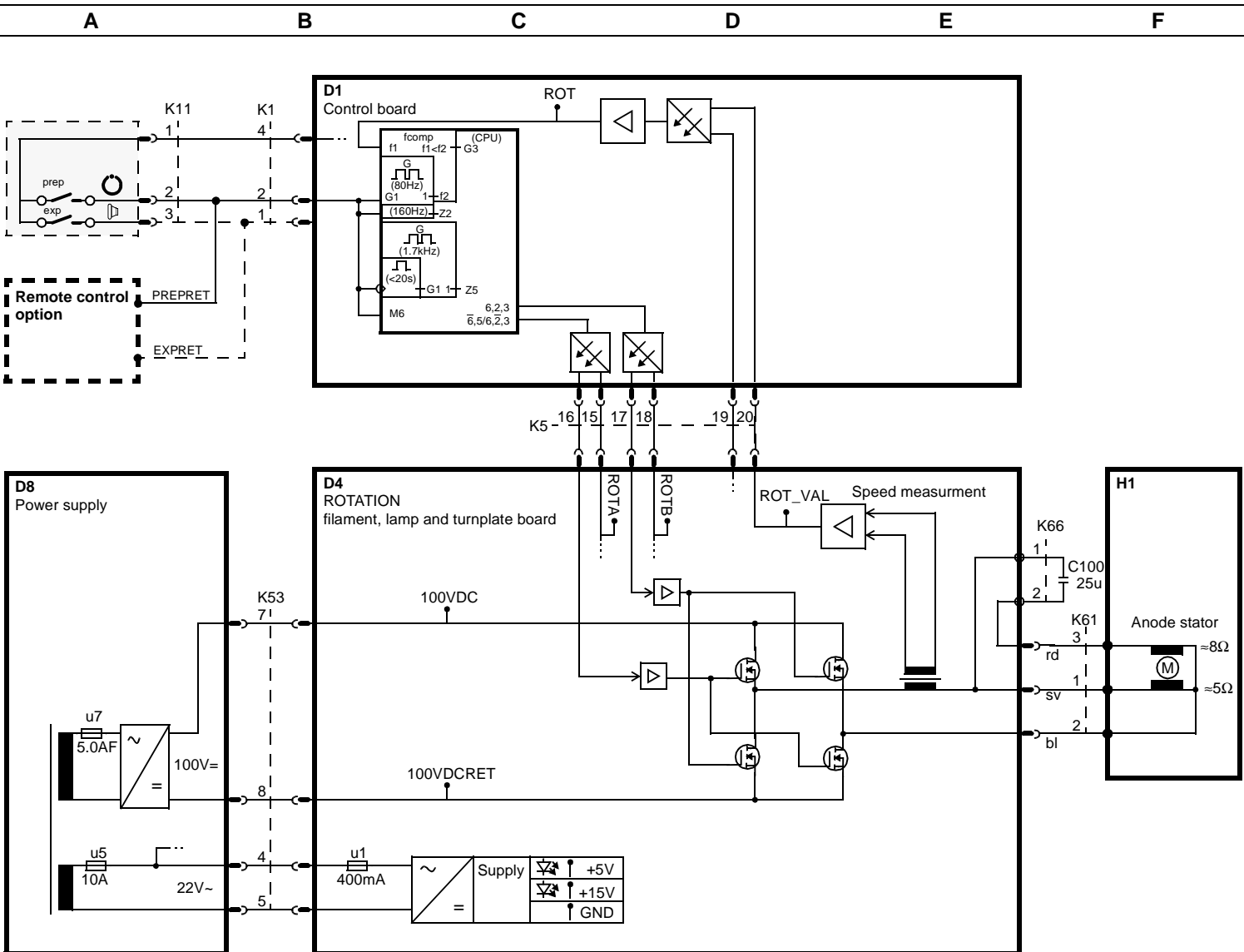
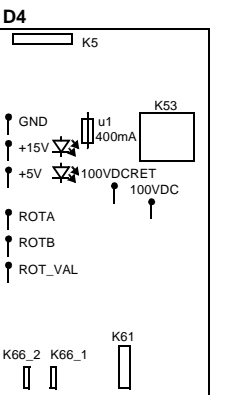
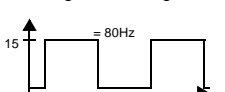


**ROT\_VAL:** During freerunning.

= 160Hz => 9600 rpm (anode speed)

**Control board**

**ROT:** During freerunning





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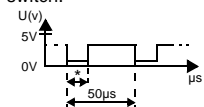
4

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## Measuring points:

**Filament board**  
**+15V, +5V, GND, 60VDC, 60VDCRET:** Supply voltage

**FIL:** Drive pulses to switch.



\* Stand by = 6µs  
 Preparation and exposure = 5.5-33µs

### Control board

**FILVOL:** Measured supply voltage for filament.

1V  $\Rightarrow$  14V

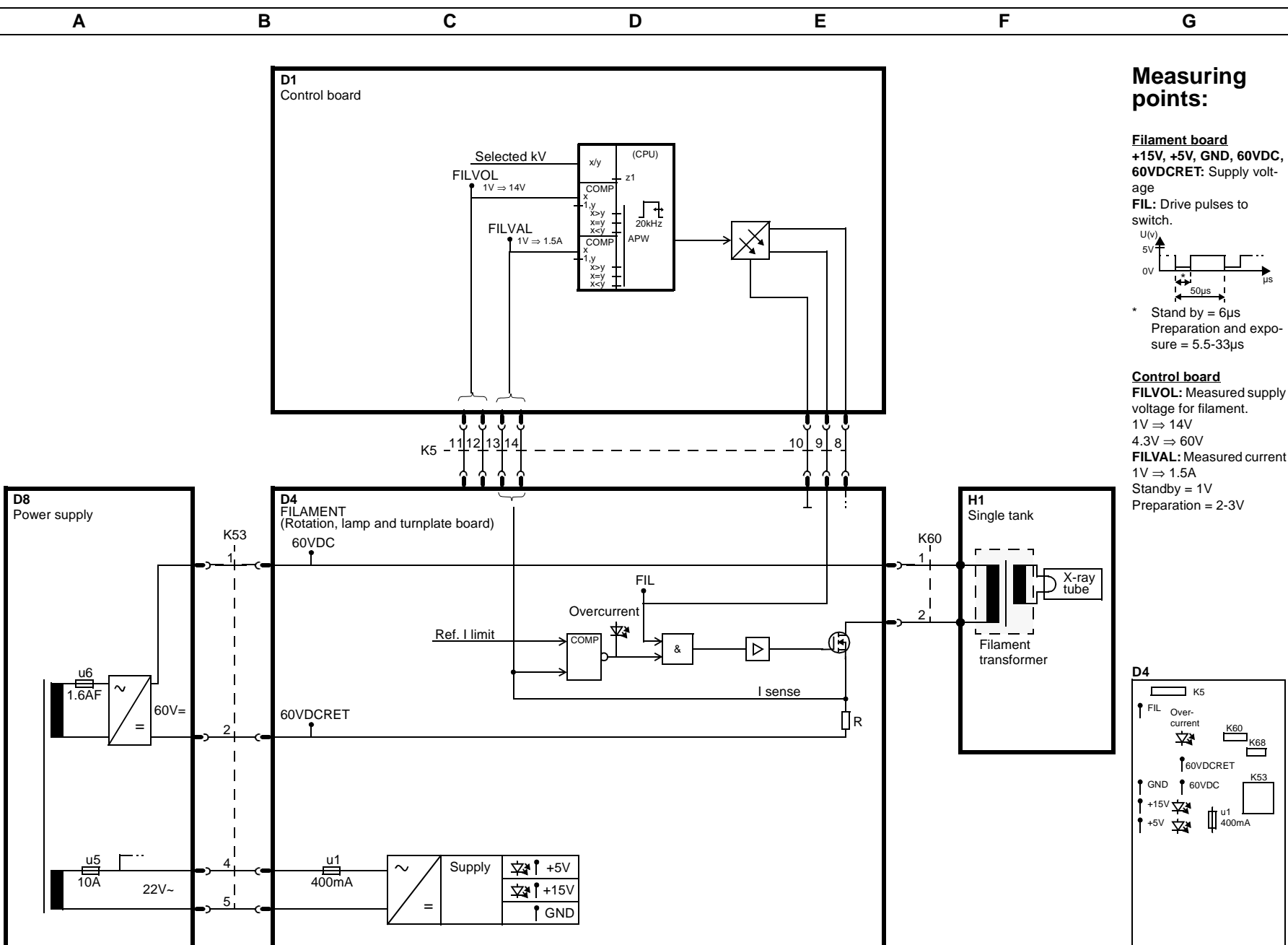
4.3V  $\Rightarrow$  60V

**FILVAL:** Measured current

1V  $\Rightarrow$  1.5A

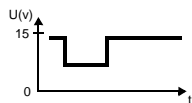
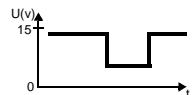
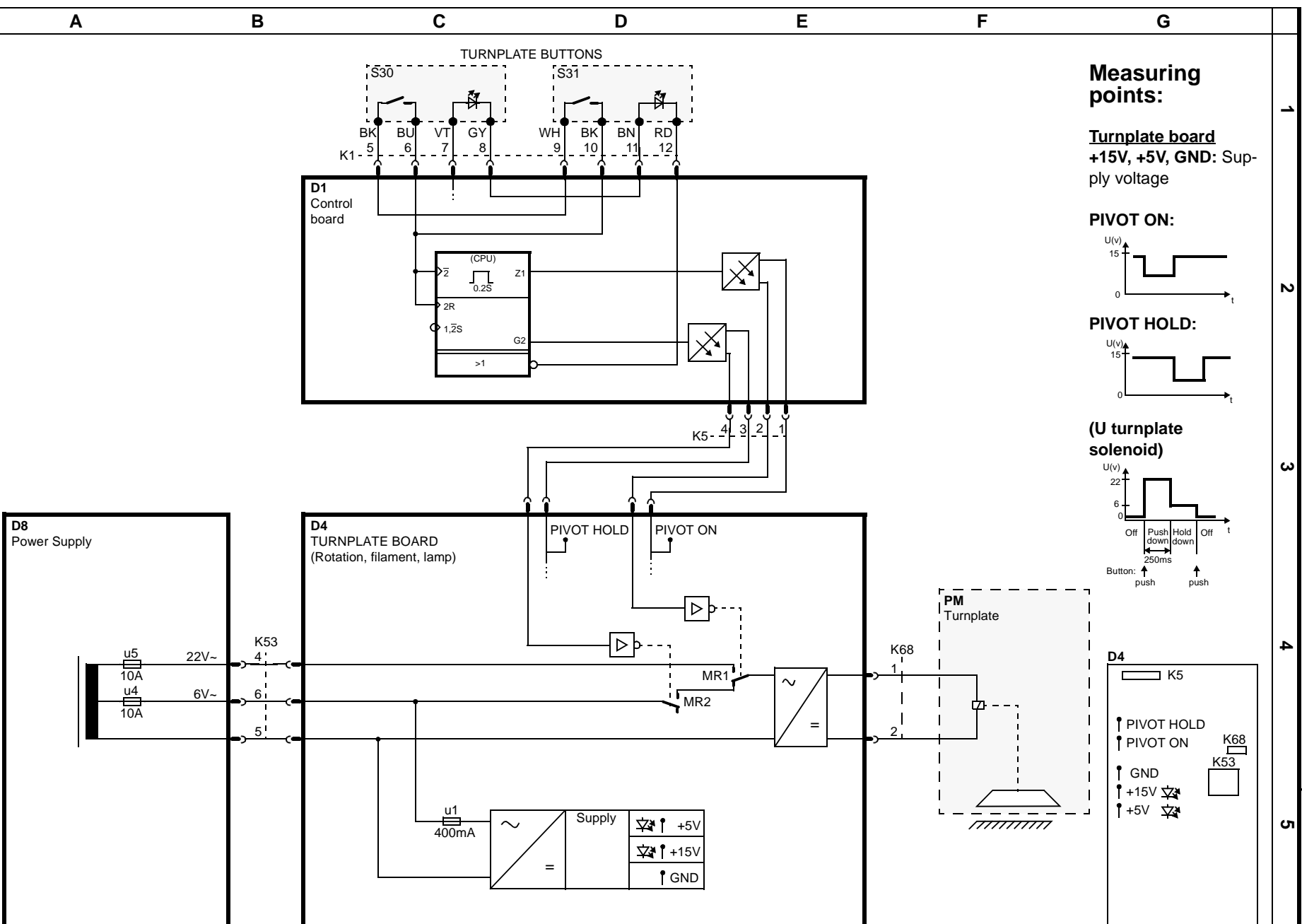
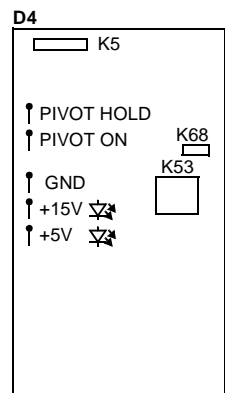
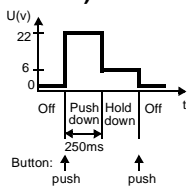
Standby = 1V

Preparation = 2-3V



**Measuring points:**

**Turnplate board**  
**+15V, +5V, GND:** Supply voltage

**PIVOT ON:****PIVOT HOLD:****(U turnplate solenoid)**

Lamp control

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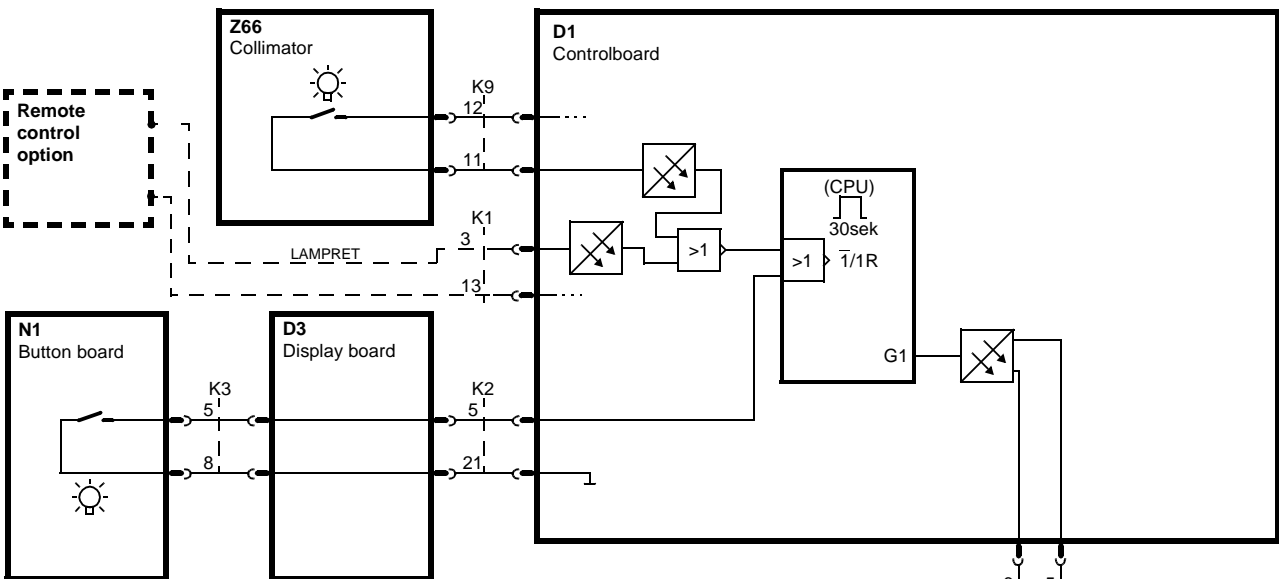
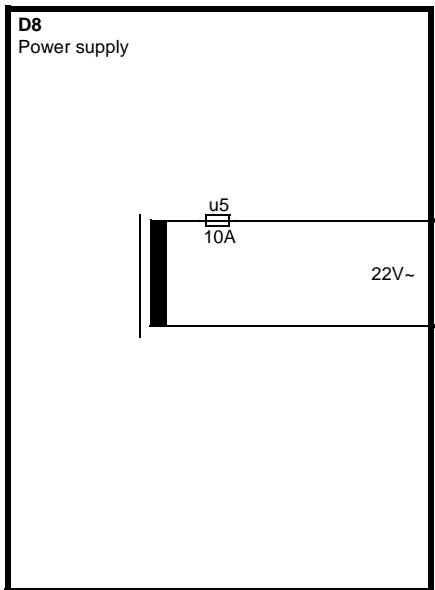
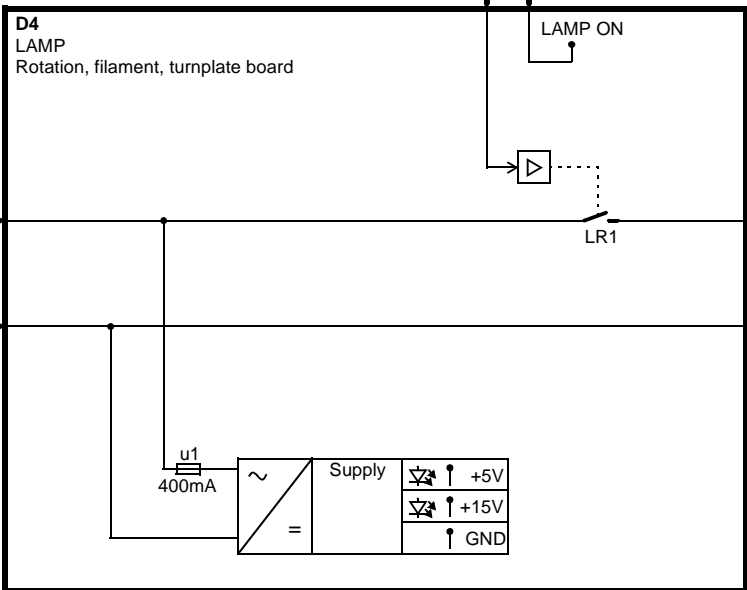
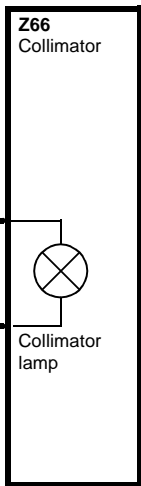
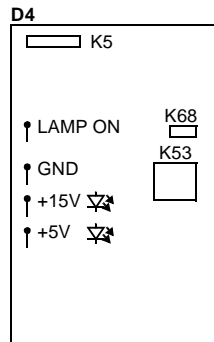
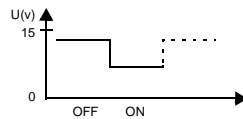
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Measuring points:

Lamp board

+15V, +5V, GND: Supply voltage

LAMP ON:



1 2 3 4 5

